CLAIMS

What is claimed is:

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1. A guiding catheter system, comprising:

a flexible shaft having a distal end shaped for accessing a target vessel; and

a handle assembly movably coupled to the flexible shaft, the flexible shaft selectably movable between a plurality of discrete positions of a first degree-of-freedom defined relative to the flexible shaft, the flexible shaft restrained in the first degree-of-freedom at each position of the plurality of discrete positions, the flexible shaft movable through a predetermined displacement of a second degree-of-freedom defined relative to the flexible shaft at each position of the plurality of discrete positions; and

wherein motion of the flexible shaft relative to the handle assembly results in a controllable sweeping motion at the distal end of the flexible shaft.

- 2. The guiding catheter system of claim 1, wherein the first degree-of-freedom comprises a longitudinal displacement relative to the flexible shaft, and the second degree-of-freedom comprises an axial rotation relative to the flexible shaft.
- 3. The guiding catheter system of claim 1, wherein the first degree-of-freedom comprises an axial rotation relative to the flexible shaft, and the second degree-of-freedom comprises a longitudinal displacement relative to the flexible shaft.

4. The guiding catheter system of claim 1, further comprising a tightening member provided between the flexible shaft and the handle assembly, the tightening member providing a releasable coupling between the flexible shaft and the handle assembly.

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5. The guiding catheter system of claim 4, wherein the flexible shaft is slidably positionable relative to the handle assembly in a released orientation of the tightening member, thereby allowing the flexible shaft to be adjustably positioned relative to the handle.

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- 6. The guiding catheter system of claim 4, wherein the tightening member comprises a rotating hemostatic valve seal.
- 7. The guiding catheter system of claim 1, wherein the handle assembly comprises:

a housing; and

a guide member attached to the flexible shaft, the guide member restrained in the first-degree-of freedom relative to the housing at each position of the plurality of positions and movable relative to the housing through the displacement of the second degree-of-freedom at each position of the plurality of positions.

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8. The guiding catheter system of claim 1, wherein the handle assemble comprises a guide member attached to the shaft, and a housing movable coupled to the guide member via a slot and pin arrangement.

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9. The guiding catheter system of claim 8, wherein the slot and pin arrangement includes a serpentine slot provided on the guide member slidably coupled to a pin provided on the housing.

- 10. The guiding catheter system of claim 8, wherein the slot and pin arrangement includes a serpentine slot provided on the housing slidably coupled to a pin provided on the guide member.
- 5 11. A method of locating a destination vessel, comprising: introducing a catheter shaft into an access vessel that provides access to

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the destination vessel;

repeatedly performing, until the destination vessel is located by a distal end of the catheter shaft, steps comprising,

mechanically restraining a proximal end of the catheter shaft from travel in a first degree-of-freedom relative to the catheter shaft at one of a plurality of positions of the first degree-of-freedom; and

moving the proximal end of the catheter shaft through a mechanically limited displacement of a second degree-of-freedom defined relative to a centerline of the catheter shaft; and

cannulating the destination vessel with the distal end of the catheter shaft.

- 12. The method of claim 11, wherein the first degree-of-freedom comprises a linear displacement relative to a centerline of the flexible shaft, and the second degree-of-freedom comprises an axial rotation relative to the centerline of the flexible shaft.
- 13. The method of claim 11, wherein the first degree-of-freedom comprises an axial rotation relative to a centerline of the flexible shaft, and the
 25 second degree-of-freedom comprises a linear displacement relative to the centerline of the flexible shaft.

- 14. The method of claim 11, wherein mechanically restraining the proximal end of the catheter shaft from travel through the first degree-of-freedom comprises mechanically restraining the proximal end of the catheter shaft from travel through the first degree-of-freedom via a handle assembly movably coupled to the catheter shaft.
- 15. The method of claim 14, further comprising adjustably locating the handle assembly on the proximal end of the catheter shaft.
- 16. The method of claim 11, wherein moving the proximal end of the catheter shaft through the mechanically limited displacement of the second degree-of-freedom comprises moving the proximal end of the catheter shaft through the mechanically limited displacement of the second degree-of-freedom via a handle assembly movably coupled to the catheter shaft.

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- 17. The method of claim 16, further comprising adjustably locating the handle assembly on the proximal end of the catheter shaft.
 - 18. A catheter assembly, comprising:

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a flexible shaft having a distal end shaped for accessing a target vessel; means for selectably moving the shaft between a plurality of discrete positions of a first degree-of-freedom defined relative to the flexible shaft;

means for restraining a motion of the shaft in the first degree-of-freedom at each position of the plurality of discrete positions; and

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means for moving the flexible shaft through a second degree-of-freedom defined relative to the flexible shaft at each position of the plurality of discrete positions.

- 19. The catheter assembly of claim 18, wherein the first degree-of-freedom comprises a linear displacement relative to the flexible shaft, and the second degree-of-freedom comprises an axial rotation relative to the flexible shaft.
- 5 20. The guiding catheter system of claim 18, wherein the first degree-of-freedom comprises an axial rotation relative to the flexible shaft, and the second degree-of-freedom comprises a linear displacement relative to the flexible shaft.